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CHEMICAL MANUFACTURERS ASSOCIATION

GERALDINE V. COX, Ph.D.
Vice President
Technical Director

June 17, 1985

Central Docket Section (A-130)
Attention: Docket No. OAQPS-A-79-32
U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

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ENVIRONMENTAL PROTECTION
AGENCY

JUN 17 1985

CENTRAL DOCKET
SECTION

Gentlemen:

The Chemical Manufacturers Association, (CMA) submits the enclosed comments on the April 16, 1985 grant of petition for reconsideration and proposed rules for equipment leaks of VOC's from synthetic organic chemical manufacturing industry, petroleum refineries; equipment leaks of benzene; benzene emissions from coke by-product recovery plants; distillation unit operations; volatile organic liquid storage vessels; and general provisions.

Please contact Alice Mayer of my staff, at 887-1176, on any matters related to this submission.

Sincerely,

Geraldine V. Cox

cc: Fred Dimmick, SDB, US EPA
Gil Wood, SDB, US EPA
Leslie B. Evans, CPB, US EPA
Robert Rosensteel, CPB, US EPA

BEFORE THE
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

COMMENTS OF
THE CHEMICAL MANUFACTURERS ASSOCIATION
ON EPA'S GRANT OF PETITION FOR RECONSIDERATION
AND PROPOSED RULES CONCERNING THE FLARE EXIT
VELOCITY LIMITS IN CERTAIN
NSPSs AND NESHAps

Equipment Leaks of VOC From Synthetic Organic)
Chemical Manufacturing Industry, Petroleum)
Refineries; Equipment Leaks of Benzene;)
Benzene Emissions From Coke By-Product)
Recovery Plants; Distillation Unit Opera-)
tions; Volatile Organic Liquid Storage)
Vessels; and General Provisions)
(50 Fed. Reg. 14941) April 16, 1985,)
Grant of Petition for Reconsideration)
and Proposed Rules)

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June 17, 1985

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COMMENTS OF THE CHEMICAL MANUFACTURERS ASSOCIATION ON
GRANT OF PETITION FOR RECONSIDERATION AND PROPOSED RULES
CONCERNING EQUIPMENT LEAKS OF VOC FROM SYNTHETIC ORGANIC CHEMICAL
MANUFACTURING INDUSTRY, PETROLEUM REFINERIES; EQUIPMENT LEAKS OF
BENZENE; BENZENE EMISSIONS FROM COKE BY-PRODUCT RECOVERY PLANTS;
DISTILLATION UNIT OPERATIONS; VOLATILE ORGANIC LIQUID STORAGE
VESSELS; AND GENERAL PROVISIONS
50 FED. REG. 14941 (APRIL 16, 1985)

The Chemical Manufacturers Association (CMA) submits the following comments on the Environmental Protection Agency's (EPA's) Grant of Petition for Reconsideration and Proposed Rules concerning the flare exit velocity limits in certain New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP). CMA is a non-profit trade association whose members comprise more than 90 percent of the production capacity of basic industrial chemicals in the United States. Many of CMA's members own and operate facilities which are covered by the relevant NSPSs and NESHAPs and which use flares. Further, the Petition for Reconsideration which EPA is granting was submitted by CMA. Therefore, CMA has a direct and vital interest in this grant of petition and proposed rules.

BACKGROUND

The CMA Petition, and EPA's proposed revisions, grew out of the flare exit velocity limits in the NSPS for equipment leaks of VOC from the synthetic organic chemical manufacturing industry. Those limits, as issued on October 18, 1983 (48 Fed. Reg. 48328), required steam-assisted and non-assisted flares to be designed for and operate with an exit velocity of less than 60 ft/sec. CMA believed that this restriction was unnecessary, since flares at all

velocities are an extremely effective control technique (greater than 98% efficiency). CMA filed a petition to review the NSPS in the U.S. Court of Appeals for the District of Columbia Circuit. ^{1/} In addition, on December 15, 1983, CMA filed with EPA a Petition for Reconsideration or Stay (attached as Appendix A). In that Petition, CMA asked that EPA reconsider the flare velocity limits and/or stay the limits pending EPA review of the recent flare study performed for EPA by Energy and Environmental Research Corporation (EER).

After submission of the Petition, CMA and EPA met to clarify the issues to be resolved. On November 19, 1984, CMA and EPA signed a Joint Stipulation of Settlement in the Court of Appeals litigation (attached as Appendix B). In that agreement, EPA agreed to propose to revise the flare exit velocity limits in the NSPS so that flares designed for and operated with a velocity of less than 400 ft/sec would be allowed if the heat content were greater than 1000 Btu/scf. EPA also agreed to clarify, in the preamble to the proposal, (1) the applicability of the operating limits to startup, shutdown and malfunction conditions, and (2) the appropriate method for determining exit velocity of a flare.

^{1/} Chemical Manufacturers Association, Inc. v. U.S. Environmental Protection Agency, No. 83-2286 (D.C. Cir., petition filed December 15, 1983).

In the notice of April 16, 1985, EPA grants CMA's Petition. EPA proposes to revise the flare exit velocity limits as stated above in the VOC equipment leaks NSPS and in five other standards: the proposed NSPS for VOC emissions from distillation unit operations in the synthetic organic chemical manufacturing industry; the final NSPS for equipment leaks of VOC from petroleum refineries; the proposed NSPS for volatile organic liquid storage vessels constructed after July 23, 1984; the final NESHAP for equipment leaks of benzene; and the proposed NESHAP for benzene emissions from coke by-product recovery plants.

In addition, EPA proposes to allow steam-assisted and non-assisted flares to be designed for and operated with an exit velocity less than V_{max} (a velocity determined by reference to a formula dependent on the net heating value of the gas being combusted) and less than 400 ft/sec. Further, EPA proposes to insert the flare control requirements into the NSPS General Provisions (40 CFR Part 60), to apply to all NSPSs and NESHAPs involving flares. Finally, EPA clarifies the two aspects of the flare requirements mentioned above.

GENERAL COMMENTS

CMA supports EPA's proposed changes to the flare velocity limits. We continue to believe that flares are highly efficient at

all velocities. ^{2/} EPA's proposal to expand the allowable range of flare velocities is supported by the evidence set forth in CMA's Petition as well as the new EER study. The EER study clearly supports 98% efficiency for flares with velocities up to 400 ft/sec and heat contents above 1000 Btu/scf. ^{3/} However, the incorporation of new provisions to allow these flares to operate (and to allow flares satisfying the Vmax formula to operate) should not be taken to indicate that other flares are not 98% efficient. Properly, EPA has stated that it will continue to evaluate all relevant data and, as further information becomes available, to review the propriety of the flare limits and revise those limits as appropriate. We commend EPA for committing to a continuing review of the flare limits. ^{4/}

We also support EPA's decision to extend the flare revisions to the velocity limits in all relevant NSPSS and NESHAPs. This extension makes sense, since EPA's conclusions on flare efficiency apply equally to flares in all industry categories using these

^{2/}See CMA Petition (Appendix A) at 1-7.

^{3/}See "Evaluation of the Efficiency of Industrial Flares: Test Results," (EPA - 600/2-84-095, PB84-199371), Figure 5-1 at 5-4.

^{4/}In particular, EPA should review some of the existing studies in light of the findings of the EER study. EPA has rejected the conclusions of several of those studies on the basis of several technical factors, such as the inability to close a mass balance. However, the EER study concluded that some of the factors were in fact not relevant to calculations of flare efficiency. (See "Evaluation of the Efficiency of Industrial Flares: Test Results," at 5-1 through 5-3.)

control devices. It is also proper for EPA to incorporate the common flare requirements into the NSPS General Provisions. This step would be administratively efficient and should make the flare provisions easier to understand and comply with.

EPA should also incorporate the flare requirements into the NESHAP General Provisions, 40 CFR Part 61, since two of the standards covered by the flare proposal are NESHAPs. Section 60.18(a) does appear to apply to NESHAPs as well as NSPS (assuming that the individual standard specifically refers to §60.18). However, the language is not very clear on this point. To alleviate possible confusion, EPA should insert the flare requirements into the Part 60 General Provisions and the Part 61 General Provisions and should clarify the applicability of each of these two new sections.

CMA also commends EPA for issuing the requested clarifications. EPA's clear statements on these two issues -- applicability of the flare limits to startups, shutdowns and malfunctions; and the proper method to determine exit velocity -- will assist understanding of, and compliance with, the flare limits.

SPECIFIC COMMENTS

1. There is an important inconsistency between the proposed limits in the specific standards and in the General Provisions. The General Provisions allow steam-assisted and non-assisted flares to be designed for and operated with an exit velocity less than V_{max} and less than 400 ft/sec. However, the limits in the specific standards do not allow these flares. This seems to be a technical omission, and should be corrected. However, as long as the flare requirements are incorporated into 40 CFR Parts 60 and 61 in the correct form--with the " V_{max} " provision-- no correction of the omission seems necessary, since the flare requirements in the specific standards will be deleted entirely and replaced by references to the General Provisions.

2. The General Provisions are also inconsistent with the specific standard in another, less important, way. The General Provisions specify limits of 18.3 m/sec and 122 m/sec. The other standards set limits of 18 m/sec and 120 m/sec. All provisions should be made consistent.

3. §60.482-10(d)(4)(ii): The words "shall be" should be deleted.

4. §60.18: Whenever a metric figure is given (MJ/scm or m/sec), the equivalent in BTU/scf or ft/sec should be given in parentheses. This is not done consistently throughout §60.18.

5. §60.18(c)(1): "To total" should be changed to read "a total."

6. §60.18(c)(3), fifth line: "The new heating value" should be changed to read "the net heating value."

7. §60.18(c)(4)(iii): The references to "(f)(g)(4)" and "(f)(g)(5)" should be changed to read "(f)(4)" and "(f)(5)".

8. §60.18(f)(3): The last portion of the formula H_t should read "where the standard temperature for $\frac{(g \text{ mole})}{(scm)}$ is 20° C."

December 15, 1983

William D. Ruckelshaus, Administrator
U. S. Environmental Protection Agency
Suite 1200, West Tower
401 M Street, Southwest
Washington, D.C. 20530

Re: Petition of the Chemical Manufacturers Association for
Reconsideration or Stay of EPA's New Source Performance
Standard for Equipment Leaks of VOC in the Synthetic
Organic Chemical Manufacturing Industry,
48 Fed. Reg. 48328 (October 18, 1983)

Dear Administrator Ruckelshaus:

In accordance with Section 307(d)(7)(B) of the Clean Air Act, 42 U.S.C. § 7607(d)(7)(B), the Chemical Manufacturers Association (CMA) hereby petitions for reconsideration or stay of EPA's recently promulgated New Source Performance Standard for equipment leaks of VOC in the Synthetic Organic Chemical Manufacturing Industry, insofar as it places a velocity limitation on flares used as a control device. EPA's contractor, Energy and Environmental Research Corporation, has recently completed a study of the efficiency of high velocity industrial flares as a control device, which EPA has indicated may cause the Agency to reevaluate its present position on the use of flares. Pending complete Agency review of this new information, CMA believes that EPA should not limit use of high velocity flares, which are a widely used and highly efficient (over 98% efficiency) control technique.

CMA has also filed today a Petition for Review of the New Source Performance Standard in the Court of Appeals for the District of Columbia Circuit in order to protect its rights under Section 307(b)(1) of the Clean Air Act, 42 U.S.C. § 7607(b)(1). CMA hopes, however, that the flare velocity issue can be resolved on the basis of discussion and sound technical information rather than litigation.

We would appreciate hearing from you as soon as possible as to whether the Agency will grant the Petition For Reconsideration Or Stay, in order that we may be able to seek a stay from the Court of Appeals if the Agency elects not to grant the Petition. As discussed in the attached

William D. Ruckelshaus, Administrator
U. S. Environmental Protection Agency
December 15, 1983
Page Two

Petition, a stay is necessary to prevent serious irreparable injury to many CMA member companies.

Sincerely yours,



David F. Zoll
General Counsel
Chemical Manufacturers Association

cc: Joseph A. Cannon
Fred Dimmick

BEFORE THE
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Standards of Performance for New	:	
Stationary Sources; Synthetic	:	
Organic Chemical Manufacturing	:	Docket No.
Industry; Equipment Leaks of VOC;	:	A-79-32
Reference Methods 18 and 22	:	
48 <u>Federal Register</u> 48328	:	
(October 18, 1983)	:	

PETITION OF
THE CHEMICAL MANUFACTURERS ASSOCIATION
FOR RECONSIDERATION OR STAY

The Chemical Manufacturers Association (CMA) is a nonprofit trade association whose member companies represent more than 90% of the productive capacity of basic industrial chemicals within this country. CMA and its members have, for several years, participated actively with the Agency in the development of a new source performance standard (NSPS) for equipment leaks of VOC in the synthetic organic chemical manufacturing industry (SOCMI). The final NSPS promulgated by EPA on October 18, 1983 (48 Fed. Reg. 48328), on the whole, reflects the joint efforts of industry and the Agency to develop a workable and reasonable regulatory approach to the control of fugitive emissions in this industry.

CMA believes, however, that one of the restrictions placed on the use of flares as a device for controlling VOC equipment leaks -- the limitation on flare velocity --

e.g., Background Information For Promulgated Standard (June 1982 EIS) at 4-7; EPA OAQPS Statement of November 1, 1983 Transmitting EPA Presentation To The National Air Pollution Control Techniques Advisory Committee (NAPCTAC) Meeting of November 29-30, 1983; EPA Statement at the November 30, 1983 NAPCTAC meeting. The EER study will shortly undergo peer review. Although CMA has not yet reviewed that study, CMA believes that any well conducted study will confirm that flares of all velocities are an extremely effective (over 98% efficiency) control technique. In light of the ongoing review of the new EER study, and the serious and immediate harm to SOCFI if a NSPS containing the present velocity limitation is implemented, CMA requests that the Agency (1) reconsider this aspect of the NSPS, and/or (2) stay this aspect of the NSPS pursuant to Section 307(d)(7)(B) of the Clean Air Act, 42 U.S.C. § 7607(d)(7)(B), pending review of the EER study and revision of EPA's flare policy.

I. THE DATA AVAILABLE AS OF THE DATE OF
PROMULGATION OF THE NSPS DO NOT SUPPORT
LIMITING USE OF FLARES AS A CONTROL DEVICE

Flares are a widely used, longstanding and essential control technique for VOC emissions from SOCFI plants. Flaring has been and remains the traditional means used to dispose of industrial relief gases, including both (a) releases resulting from process start-up or turn-around, and from emergency process upsets or power failures, and (b) continuous low flow releases resulting from process vents and fugitive, storage and secondary emission sources.

Flares are designed to protect plants and workers as well as the environment. While alternatives to flares such as incineration or vapor recovery systems exist, these are generally more costly, and less practical than flares. See generally, Dubnowski and Davis, "Flare Combustion Efficiency," Prepared for Presentation at the 76th Annual Air Pollution Control Association Meeting of June 19-24, 1983.

All of the flare studies and data of which CMA is aware (including the materials cited at pp. 4-2 to 4-5 of EPA's June, 1982 EIS) indicate that flares at all velocities provide highly efficient VOC control -- control even greater than the 95% emission reduction level specified by EPA in the final NSPS for other control devices. Nevertheless, in proposing the NSPS for equipment leaks of VOC for SOCOMI, EPA expressed concern about the combustion efficiency of flares, and did not include flares as an allowable control technique in the proposed NSPS. EPA acknowledges that its concern was not based on any observed data, but rather on "theoretical computations . . . based on assumptions that may not be applicable . . ." EIS at 4-2.

In meetings with CMA, EPA expressed particular reservations over the combustion efficiency of low velocity flares. ^{1/} In order to answer those concerns, CMA and EPA

^{1/} See also EIS at 4-2, where EPA states that the "primary consideration" for restricting flare use was the concern "that flare efficiency could be as low as 60 percent for destruction of VOC in low flow intermittent streams sent to a large flare." (Emphasis added).

together undertook an additional study designed to measure the efficiency of low velocity flares. The CMA/EPA Flare Efficiency Study (March, 1983), conducted by Engineering Science of Austin, Texas, confirmed that even low velocity flares (60 feet/second or less) were more than 98% efficient as a control device.

In the preamble to the final NSPS, EPA states that the CMA-EPA flare study investigated flares "over a wide range of exit velocity, composition and flare gas heat content conditions," and that, on the basis of the study, EPA has determined that flares are an allowable control technique if they meet the following conditions:

1. Steam assisted flares combusting gases with heat contents over 300 BTU/SCF must have exit velocities less than 60 ft/second;
2. Flares operated without assist with heat contents over 200 BTU/SCF must have exit velocities less than 60 ft/second;
3. Air assisted flares operated with heat contents of 300 BTU/SCF must have exit velocities below a maximum value which depends on the heat content of the gas.

48 Fed. Reg. 48333-34 (October 18, 1983). The preamble indicates that flares meeting those conditions "are acceptable because they achieve more than 95 percent emission reduction," but implies that higher-velocity flares do not achieve at least 95 percent emission reduction. Id.

CMA submits that neither the CMA-EPA study nor any other available data justifies establishing a 60 ft/second maximum velocity limitation or any other limitation on flares used to control equipment leaks. As the Agency is

aware, the CMA-EPA test program was designed to examine the effects of flaring propylene at differing flows, differing BTU content and differing steam to hydrocarbon ratios. The concerns with flare efficiency at low flows caused the study to be structured to examine flare efficiency only at low velocities. The maximum test velocity was determined by physical and safety concerns related to the test equipment. The crane used to support the sample probe and the radiant heat release from the flare limited the maximum test velocity to 60 ft/second. There were no data generated during the CMA-EPA flare study which showed or would support a conclusion that flares were inefficient above velocities of 60 ft/second. The 60 ft/second velocity was simply the maximum velocity that was tested during the steam assisted flare tests. The 60 ft/second limit was developed without a scientific review of the parameters which affect flare flame stability.

CMA believes that the CMA/EPA study fully answered the questions raised by EPA concerning the efficiency of low velocity flares and, together with the other available flare studies (EIS 4-2 to 4-5), supports the conclusion that flares at all velocities provide highly effective VOC control. For example, in the study conducted by Palmer (IV-M-8), ethylene was flared at velocities ranging from 50 to 250 ft/second. Destruction efficiencies of ethylene were greater than 97.8%. The German flare study conducted by Siegel was a year long comprehensive study structured to

examine flare efficiency using a refinery flare gas. During Siegel's tests 4 and 5, flared gases were tested at velocities of 140 and 125 ft/second based on a nominal flare diameter of 20 centimeters. Some 1300 measurements were made during the study, virtually all of which showed flares to be 99%+ efficient. The Lee and Whipple study (IV-M-18), involving a flare velocity of approximately 3 ft/second, resulted in a destruction efficiency of 99.9% or greater. The Howes study (IV-M-27), sponsored by EPA, involved flares with velocities of 27 ft/second, and resulted in combustion efficiencies greater than 99%. ^{1/}

As the foregoing demonstrates, there is no basis in any reputable flare study to support EPA's "theoretical" conclusion that flares at any velocity are not a highly effective control device. At the time of the CMA/EPA study, EPA expressed no such concern with regard to high velocity flares. It would be a substantial misuse of the data generated by the CMA/EPA study to attempt to justify a distinction between the control efficiency of high and low velocity flares based on those data.

^{1/} In the EIS, EPA notes that a study on flares conducted by the Battelle Memorial Laboratory has never been made available to the public for review. EIS 4-9 to 4-10. EPA offers no explanation for this failure, although the Agency has promised the public several times that the study would be released. CMA believes that this study should also be released for public review and comment.

II. IN LIGHT OF THE ONGOING REVIEW OF
EPA'S RECENTLY COMPLETED EER STUDY,
EPA SHOULD NOT NOW LIMIT FLARE VELOCITY

In order to test the validity of its "theoretical calculations," EPA commissioned a more extensive study by EER of flares of various sizes and velocities. EIS 4-5. The EER study has not become publicly available, although the draft report was issued for peer review only after both the close of the public comment period and the promulgation of the final NSPS. The new data generated by the EER study clearly are, however, of central relevance to the outcome of the NSPS, insofar as the NSPS limits use of flares as a control technique. EPA itself has recognized as much, stating that the study "may result in changes in the EPA position on the operating conditions necessary to obtain 98% combustion efficiency." EPA Statement of November 1, 1983, cited supra at p. 2.

Had the Agency had the results of the EER study available to it at the time of proposal and/or promulgation of the NSPS for VOC equipment leaks, it is highly questionable whether the Agency would have placed velocity limitations on the use of flares acceptable as a control technique. As discussed above, the Agency's concern was not based on studies or data showing that flares of any velocity, high or low, are less than 98% efficient. Neither the BID nor final EIS cited any such data. EPA in fact stated in the EIS that "EPA does not have any data that shows that larger flares are not as effective as smaller flares in combusting flare

gases." EIS A-67. The decision to limit flare use was based solely on "theoretical calculations" which the EER study was designed to test, id. at 4-7. CMA therefore submits that both 42 U.S.C. § 307(d)(7)(B) and considerations of fundamental fairness require EPA either (1) to reconsider its limitation on flare velocity, or alternatively, (2) to stay operation of the flare velocity limitation pending complete peer review of the new data.

III. RETENTION OF THE FLARE VELOCITY LIMIT
IN THE NSPS AS PROMULGATED WOULD CAUSE
SERIOUS AND IRREPARABLE INJURY TO SOCFI

The flare velocity limitation in the final NSPS, as promulgated, would impose enormous hardships on many SOCFI plants, as well as costs far in excess of those projected by the Agency in its economic impact analysis. Contrary to EPA's basic assumptions in the BID and EIS, it would be virtually impossible for many, if not most, SOCFI plants to comply using existing control technology. While it would be possible to design and construct entirely new grass roots plants to meet the new flare limitation (albeit at considerably greater cost than estimated by EPA), existing plants, including plants constructed or modified after January 5, 1981 (the date of proposal), generally utilize flares designed and operated at velocities considerably in excess of the 60 ft/second limitation. The construction of new flares to meet the velocity restrictions will be at best costly, and in many cases completely infeasible.

For example, if an existing flare were to exceed the 60 ft/second limitation routinely for non-emergency releases, a new flare would have to be constructed to handle the routine releases at less than 60 ft/second. Such equipment would cost millions of dollars per process unit. The retrofit of flares or incinerators in existing process units is difficult and sometimes impossible due to equipment spacing or flare burn zone conditions. CMA seriously questions whether imposing such costs and burdens on industry would be justified under Section 111 even if the Agency had some reliable data calling into question the efficacy of flares as a control device. Where, as here, the available data demonstrate that flares at all velocities are over 98% efficient, the burden placed on industry by the flare velocity limitation is plainly inconsistent with the requirements of Section 111(a)(1).

A. Contrary to EPA's Assertions In The
BID And EIS, SOCFI Plants Cannot Comply
With The Flare Velocity Limitation
With Existing Control Equipment

EPA, recognizing the difficulties of retrofitting SOCFI plants, has based its cost and feasibility determinations regarding the NSPS on the assumption that "[r]egardless of whether a unit is a new or an existing unit, EPA expects that an existing control device will be used." EIS at 9-8 to 9-9. However, if flare velocity is limited to 60 ft/second, compliance with existing control devices will not be possible for numerous SOCFI plants.

CMA member companies have reviewed their operations in light of the final NSPS, and many have concluded that, given the flare velocity limitation, compliance simply cannot be achieved with existing control equipment. Especially in larger and more integrated SOCOMI plants, multiple process units (with literally hundreds of fugitive emission inputs) are frequently vented to the same flare. Relief to the flare is a random process, with the operator having little or no control over the velocity of the gases going to the flare. Characteristically, safety, production and cost considerations dictate that flares on many larger, integrated SOCOMI plants be designed and operated at much higher velocities, often in the neighborhood of 100-400 ft/second. Flares are designed with such velocities in order to handle safely the volume of gases that may be released from large vessels during emergency situations, and are considerably more cost-effective to operate than multiple low-velocity flares.

Under the final NSPS, such a plant faces two options: (1) to divert fugitive emission gases to existing incinerators, boilers, or other enclosed combustion devices or install new enclosed combustion devices, or (2) to install a sufficient number of new flares such that no flare would operate in excess of the 60 ft/second limitation. Given the widespread use of flares, it can be expected that existing enclosed combustion devices and/or "allowable" flares (under 60 ft/second) will be insufficient in capacity

or turn-down ability to handle fugitive gases from the process units (especially from safety valves). Even if a plant has available capacity in enclosed combustion devices, it must still install the necessary piping and other equipment to divert fugitive gases from existing flares to that device, which can easily take more than six months and cost several hundred thousand dollars. For a plant subject to the January 5, 1981 effective date, this means that the plant must either operate out of compliance, or shut down or curtail operations until such new equipment can be installed. In addition, the nature of the fugitive emissions involved may raise serious safety concerns in diverting, handling and storing such gases.

Plants that do not have sufficient enclosed combustion or flare capacity to continue operating with existing control equipment under the flare velocity limitation must install new control equipment. One CMA member has estimated that four of its six SOCFI plants constructed or modified after January 5, 1981, cannot comply by using existing flares. As CMA has previously demonstrated to EPA, space limitations make the installation of new flares impossible for many plants, thereby requiring the installation of more costly, less efficient (and frequently less safe) control equipment.

Finally, the NSPS will preclude entirely the continued use of certain types of flares such as some Linear Relief Gas Oxidizers (LRGOs), which operate at sonic flare

velocities in order to prevent flashback. Plants using such flares must, under the NSPS, replace such flares with new control equipment.

EPA, in its "economic impact" analysis, makes no attempt to quantify the enormous costs of installation of additional control equipment to comply with the flare velocity limitation in the 830 sources it estimates will be directly affected. 48 Fed. Reg. 48330; see also BID, Chapters 8-9. Since EPA mistakenly assumed that no additional control equipment would be required, its cost analysis is understated by hundreds of millions of dollars.^{1/} Moreover, as discussed supra at p.12, the increased risks to worker health and safety occasioned by the diversion of fugitive gases from existing flares is a "nonair quality health and environmental impact" which the Agency has not taken into account.

B. Compliance With The Flare Velocity Limitation
Is Rendered Difficult If Not Impossible By The
Absence Of Available Quantification Techniques

A source operating a flare at a velocity of over 60 ft/second is out of compliance with the NSPS unless it has demonstrated in advance to the Agency that its flare system is "equivalent to the flare system required in the standards." EIS 4-7, 40 C.F.R. § 60-484, 48 Fed. Reg.

^{1/} Recent cost estimates for the installation of new flares at existing SOCOMI plants indicate that the cost of a new flare for a single process unit is approximately half a million dollars, and that necessary piping to channel gases to the flare is an additional half to one million dollars.

48339. However, the absence of available quantification techniques may make it impossible for an operator either to determine whether it is in compliance, or to make the alternate showing.

The NSPS requires testing to determine the exit velocity of a flare, and specifies four reference methods, 2, 2A, 2C or 2D, to be used "as appropriate." §§ 60.482-10(d)(4), 60.485(g)(4).

While Reference Methods 2A and 2D might be adequate for small flares, they are not adequate or appropriate for measuring the actual exit velocity of larger flares. Both, by their terms, apply only to "small pipes" and "small ducts," and are designed for use with regular gas flows of uniform composition. Neither involves equipment that can be adapted to larger flare lines. For example, Method 2A requires use of a gas volume meter. We question whether, on a flare line four feet in diameter, any available gas flow meter will measure velocities of up to or above 30 ft/second, much less 60 ft/second. Moreover, the introduction into a flare line of a gas flow meter or rotometer raises severe safety problems, since such an obstruction in the line can cause flare malfunctions.

Reference Methods 2 and 2C, which require use of a pitot tube, are even more inappropriate for use with flares, particularly larger flares. Both methods require testing while the system is in normal operation. Should there be an emergency release or upset during testing, there would be no

way to insure the safety or even protect the life of the tester. No SOCOMI plant operator could in conscience subject an employee to such enormous health and safety risks. Given the risks involved, we believe that the Agency did not act reasonably in prescribing these test methods for flares.

The inability of a SOCOMI operator to determine whether his flares are being operated in compliance with the 60 ft/second NSPS limitation seriously undermines the validity of the standard, as promulgated. Withdrawal by EPA of the flare velocity limitation would eliminate the need for testing by these inadequate and unsafe methods, and thereby make the standard both more reasonable and more defensible.

C. Limiting Use Of Existing Flares Is
Inconsistent With EPA's Reliance On
Flares To Resolve Other Safety And
Technical Problems Raised By The NSPS

In several instances, EPA has relied on the availability of existing flares to resolve technical and/or safety problems raised by the final NSPS. To the extent that velocity restrictions will severely limit use of existing flares, these problems will be aggravated rather than resolved.

As EPA notes, several commenters pointed out that in emergency situations, including releases from pressure relief devices (for which the NSPS requires a performance level of no detectable emissions), and catastrophic pump seal failure, enclosed combustion devices are unable to handle flow and pressure loads safely. EIS 4-11 to 4-12.

While the Agency acknowledged the validity of these concerns, it dismissed them on the ground that "pip[ing] the relief device to a flare . . . is a common practice in the industry." Id. However, although this was certainly the case before the NSPS, it may no longer be an available option if flare velocity is limited to 60 ft/second.

A similar situation exists with regard to emergency releases from rupture disks and emergency relief valves on larger tanks and vessels. EPA agrees that venting such releases to incineration devices will create operational hazards due to design limitations (EIS 4-62), but states that:

"this same type design problem is encountered for any vent system where variable flows of explosive materials must be handled. Large variations in flowrates can typically be handled with flare systems which are now allowed, since these can achieve turndown ratios as high as 100:1." EIS 4-62.

If only flares with velocities of 60 ft/second or less are allowed, however, this will no longer be the case. It is not possible to achieve turndown ratios as high as 100:1 with flares of limited exit velocity. Therefore, to the extent that EPA intends to rely on flares to handle large variations in flow rates of explosive materials, it cannot do so consistently with the flare velocity limitation contained in the final NSPS as promulgated.

Finally, EPA has relied on the availability of existing flares in response to comments that the required

use of a rupture disk with a safety valve will require derating the vessel to 80% of design capacity. EIS 4-71 to 4-72. EPA indicates that costly derating can be avoided by the use of techniques such as flares. However, if the use of existing flares is limited by the flare velocity restriction, SOCFI operators will have to either derate vessel capacity or build new flares, thereby greatly increasing EPA's estimated costs of compliance.

D. Flare Velocity Restrictions Result In Design Problems That Greatly Increase Cost To SOCFI

Even if compliance with the standard were possible for some SOCFI using existing flares limited to 60 ft/second, or for new SOCFI by installing oversize flares to reduce flare velocity, capital operating and energy costs of operating with such flares will be far greater than EPA has estimated. Examples of the increased costs occasioned by the flare velocity limitation, which EPA has not taken into account, include:

1. The increase in pilot gas requirements due to a larger diameter flare;
2. The higher initial capital costs required to construct oversized flares for given applications to reduce velocity;
3. Shortening of flare tip life for a given application due to lower velocities exposing the flare tip to higher operating temperatures; and
4. Added purge gas requirements during shutdown and periods of no flow to the flare due to larger diameter flare.

Given the lack of any evidence that flares of velocities over 60 ft/second are less than 98% efficient, CMA believes that these added costs cannot be justified or reconciled with Section 111(a)(1).

CONCLUSION

The situation presented here is precisely the type of situation which Section 307(d)(7)(B) of the Clean Air Act was designed to handle. New information of critical importance concerning the use of flares as an effective control technique in complying with the NSPS for VOC equipment leaks has become available after the close of the comment period. The Agency has acknowledged the importance of this new information, and has previously stated that it may require changes in the Agency's flare policy. The velocity limitation will impose severe hardships on many SOCOMI plants, will increase the cost of compliance far above the cost estimates on which the standard is based, and will, in some situations, jeopardize employee health and safety. The withdrawal or stay of this narrow aspect of the NSPS will in no way delay or jeopardize compliance with the standard. Under the circumstances, reconsideration of the flare velocity limitation, and a stay of that limitation

pending complete review of the new data and revision of EPA's flare policy, is both necessary and appropriate.

Respectfully submitted,



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December 15, 1983

IN THE UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

No. 83-2286

-CHEMICAL MANUFACTURERS ASSOCIATION,

Petitioner,

v.

U.S. ENVIRONMENTAL PROTECTION AGENCY,

Respondent.

JOINT STIPULATION OF SETTLEMENT

In this case, petitioner challenges EPA's new source performance standard ("NSPS") for VOC equipment leaks at synthetic organic chemical manufacturing plants, 40 C.F.R. Part 60, Subpart VV. Petitioner has filed with EPA a petition for reconsideration of the NSPS.

STIPULATION

1. EPA agrees to convene a proceeding under Section 307(d)(7)(B) to reconsider the exit velocity restriction set forth at 40 C.F.R. 60.482-10(d)(4) as soon as reasonably possible after execution of this Stipulation.
2. EPA agrees to propose, at the time it publishes the announcement of reconsideration, the revisions and preamble language set out in the Attachment to this Stipulation.

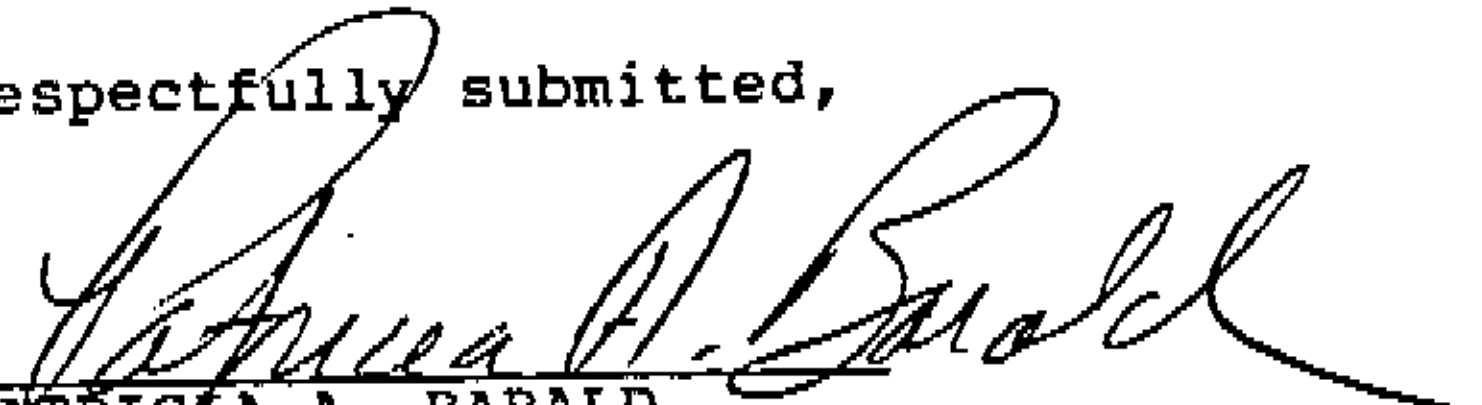
3. EPA agrees to take final action on the proposed revisions described in the preceding paragraph as soon as reasonably possible after publication of that proposal.

4. Petitioner agrees that if EPA promulgates the revisions and publishes the preamble language described in paragraph 2, above, such actions will resolve all of the issues petitioner raised or could have raised in its petition. Petitioner therefore agrees that in such event:

- a. it will not seek judicial review of such actions;
- b. it will move to dismiss the instant case voluntarily promptly after such promulgation occurs; and
- c. it will bear its own costs incurred in connection with this petition.

7. To the extent that EPA fails to promulgate final revisions that are substantially the same as the revisions set out in the Attachment, or fails to comply with any of the provisions of this Stipulation, petitioner reserves the right to proceed further with this litigation.

Respectfully submitted,


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ATTACHMENT

1. Revisions to §60.482-10 Standards: Closed vent systems and control devices, to read as follows:

* * *

(d) * * *

(4)(i) Steam-assisted and nonassisted flares shall be designed for and operated with an exit velocity, as determined by the methods specified in §60.485(g)(4), less than 18m/sec (60ft/sec), except as provided in paragraph (d)(4)(ii).

(ii) Steam-assisted and nonassisted flares designed for and operated with an exit velocity, as determined by the methods specified in §60.485(g)(4), equal to or greater than 18m/sec (60 ft/sec) but less than 120 m/sec (400 ft/sec) are allowed if the net heating value of the gas being combusted is greater than 37.3 MJ/scm (1000 BTU/scf).

2. Preamble language to clarify that "designed for and operated with" in §60.482-10 relates to representative performance and not to startup, shutdown or malfunction conditions:

"The petitioner requested that EPA clarify that the velocity limitations at §60.482-10(d)(4) apply only during representative performance of flares and not during startup, shutdown, and malfunction conditions. Methods 2, 2A, 2C, or 2D (see §60.485(g)(4)) are used in performance tests to determine the actual exit velocity of flares. These tests must be performed under representative flare operating conditions. Exceedances of velocity limitations during periods in which one or more processes (that vent to the flare) start up, shut down, and malfunction are not considered a violation (see §60.8(c)). These tests are used to ensure that the flare is designed to be and capable of being operated within the velocity limitation during representative process conditions. During non-performance test periods, operators must maintain and operate flares used to comply with Subpart VV in a manner consistent with good air pollution control practices for minimizing emissions, even during periods of startup, shutdown and malfunction (see §60.11(d))."

3. Preamble language to clarify how actual exit velocity may be determined consistent with §60.485(g)(4):

"The petitioner requested that EPA clarify the appropriate method for determining exit velocity of a flare. The formula specified at §60.485(g) requires that Method 2, 2A, 2C, or 2D be used as the test method to determine the volumetric flowrate. This flowrate should be determined in the flare header or headers that feed the flare because the volumetric

flow rate determined in these headers reflects the flowrate in the flare. After this flowrate is determined, an operator would use design and engineering principles to determine the unobstructed cross sectional area of the flare tip. With these two factors, the actual exit velocity is determined."

4. Preamble language to clarify the ongoing status of flare research efforts:

"EPA's reconsideration of the flare exit velocity restriction is based on review of currently available flare efficiency data, including an analysis of results recently obtained from a study of the combustion efficiency of flares conducted on behalf of EPA. EPA will continue to evaluate all relevant data concerning flare efficiency and, as further information becomes available, will continue to review the propriety of restrictions on the use of flares in the NSPS in light of such information. EPA will, if such information warrants, revise the NSPS as appropriate."